UNIVERSITY OF MINNESOTA
DIVISION OF AGRICULTURAL ECONOMICS - AGRICULTURAL EXTENSION SERVICE
UNIVERSITY FARM ST. PAUL MINNESOTA

TRANSPORTATION STUDY

Martin County, August 2-8, 1942

A comprehensive study of transportation was made in Martin county for the week of August 2-8, 1942. This county was selected because it was believed to be quite typical with respect to the transportation situation and the problems connected with it.

This study included three broad phases:

1. A study of the movement of all goods in and out of the county, and within the county. The businessmen of the county cooperated in this phase of the study.

2. A study of the trucks hauling products from and to the farms, such as livestock, cream and milk, eggs and poultry, petroleum and general trucks. The truckers as well as the owners and operators of the organizations handling these products cooperated in this phase of the study.

3. A study of the trucks and cars owned by the farmer and his family, used for hauling farm and family supplies. The neighborhood leaders and the farm families cooperated in this phase of the study.

Dr. A. A. Dowell and Dr. E. Fred Koller from the Division of Agricultural Economics at University Farm were in charge of this study. Other workers included G. Engelman from the Division of Agricultural Economics and H. P. Hanson, S. B. Cleland, E. Baughman, Art Karr, and Dr. W. H. Dankers from the Agricultural Extension Service. These men cooperated in gathering field data, preparing preliminary reports, and in holding meetings with interested groups. Stanley B. Simpson, Martin county agent, actively cooperated in arranging conferences, gathering field data, and arranging meetings to discuss the information obtained.

Those in charge of the study are especially grateful to all the people in the county who so willingly and enthusiastically cooperated. Few studies have been made wherein public cooperation was as complete as in this case. If the information obtained is applied to advantage in Martin and other counties, it should result in a more efficient transportation system and one less costly to producers and consumers.

TRANSPORTATION OF VARIOUS COMMODITIES BY RAIL AND TRUCK INTO AND OUT OF MARTIN COUNTY

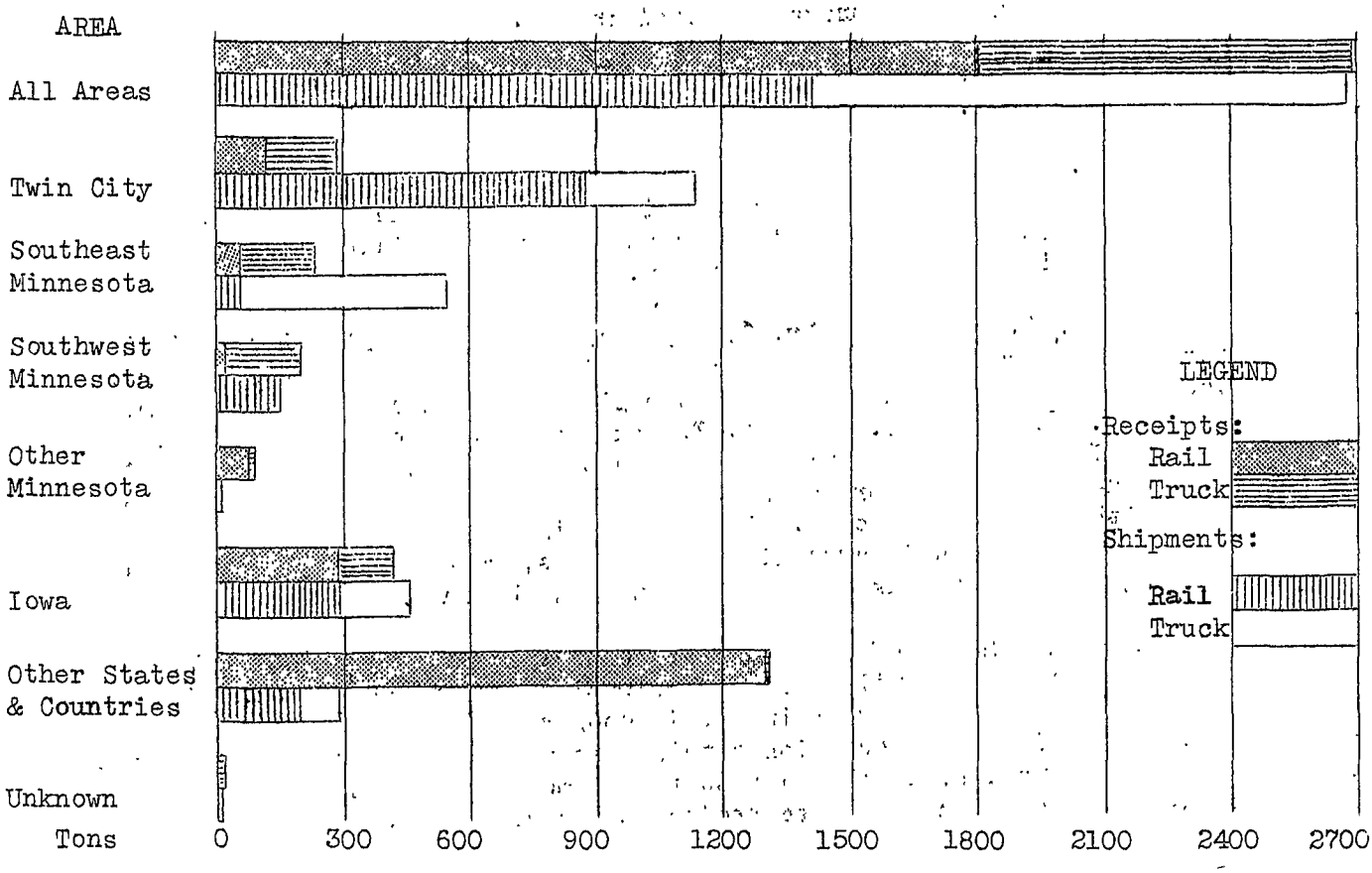
By H. P. Hanson and A. A. Dowell

What is the transportation picture in Martin county? What proportion of commodities is shipped by rail and what by truck? What types of goods are trucked and what are carried mainly by rail? How do truck receipts and shipments balance? What transportation changes could be made to further the war effort?

More than 350 business firms have helped to answer certain of these and other questions by supplying records of their wholesale receipts and shipments for the week of August 2 to 8.

Receipts and Shipments of Various Commodities

(Martin County - August 2-8, 1942)



The total ordinary receipts during the week amounted to 2,695 tons, which is at the rate of 215 pounds for each person in the county. Approximately 2,687 tons were shipped out, which is only 8 tons less than the receipts. Receipts and shipments together totaled 5,382 tons of which 3,241 tons or 60.2% was shipped by rail, and 2,141 tons or 39.8% by truck. Rail receipts were 1,820 tons or 67.5% of the total receipts and truck receipts were 875 tons or 32.5% of the total. Rail shipments accounted for 1,421 tons or 52.9% of the total, while trucks carried out 1,266 tons which is 47.1% of all shipments. Although total receipts and shipments were almost equal, yet there was a striking difference in rail shipments and receipts as the above figures indicate. Truck shipments and receipts also varied greatly.

The receipts came from 30 states in addition to Minnesota, while shipments were made to 26 other states in all parts of the United States.

A total of 1,605 tons of feed wheat from the Commodity Credit Corporation was received in the county during the week. As this was an uncommon type of receipt that is not likely to prevail over a period of time, it was not included in any of the data showing receipts.

In some areas, receipts and shipments were almost in balance. In others, they were very unequal in amont. Where this inequality occurs in truck shipments particularly, it prompts the suggestion that some adjustments may be desirable.

Receipts of Various Commodities in Tons

(Martin County - August 2-8, 1942)

Commodity	Percentage of Total	Total Receipts	Type of Transportation	
			Rail	Truck
	Per Cent	Tons	Tons	Tons
All commodities	100.0	2,695	1,820	875
Coal and coke	29.5	797	795	2
Petroleum products	23.2	624	555	69
Building materials	10.2	276	208	68
Grain	6.7	181	0	181
Feed and salt	6.7	180	85	95
Groceries and fruit	5.8	157	6	151
Hardware	3.5	94	60	34
Empty containers	3.4	86	1	85
Beer and liquors	2.5	69	22	47
Livestock	2.3	63	0	63
Furniture and furnishings	.9	24	17	7
Meat	.7	20	1	19
Eggs and cases	.7	20	20	0
Scrap iron and steel	.7	20	8	12
Bread	.5	14	1	13
Dairy products	.4	10	Trace	10
Dry goods and shoes	.3	9	7	2
Soft drinks	.3	8	0	8
Candy and tobacco	.2	6	3	3
Drugs	.2	5	4	1
Leather goods	Trace	Trace	Trace	Trace
Miscellaneous	1.2	32	27	5

Commodities that came into the county mainly by rail include coke and coal, petroleum products, building materials, hardware, furniture and furnishings, eggs and cases, dry goods and shoes, drugs and miscellaneous non-classified items. Commodities that were handled mainly by truck include grain, groceries and fruit, empty containers, beer and liquors, livestock, meat, bread, dairy products and soft drinks. Except for the grain and livestock, the products that are transported by truck are mainly of a perishable or semi-perishable nature, or are used for current consumption. Products carried mainly by rail are largely non-perishable in character.

Shipments of Various Commodities

(Martin County - August 2-8, 1942)

Commodity	Percentage of Total Per Cent	Total Shipments Tons	Type of Transportation Rail Tons	Truck Tons
All commodities	100.0	2,687	1,421	1,266
Grain	52.0	1,398	1,130	268
Livestock	16.7	453	65	388
Building materials	9.4	253	Trace	253
Soft drinks	3.7	98	0	98
Eggs and cases	3.3	88	38	50
Empty containers	2.4	64	8	56
Feed and salt	2.2	58	40	18
Scrap iron and steel	1.9	52	50	2
Dairy products	1.8	51	24	27
Hardware, etc.	1.8	47	36	11
Petroleum products	1.5	39	Trace	39
Poultry and coops	1.4	37	0	37
Groceries and fruit	.5	14	Trace	14
Beer and liquors	.1	2	0	2
Furniture and furnishings	Trace	1	1	0
Wool	Trace	Trace	0	Trace
Dry goods and shoes	Trace	Trace	Trace	0
Bread	Trace	Trace	0	Trace
Candy and tobacco	Trace	Trace	0	Trace
Miscellaneous	1.2	32	29	3

Shipments out of the county follow the same general pattern as receipts with respect to the types of commodities transported by rail and truck, though the division is not quite so definite as with receipts. Commodities leaving Martin county mainly by rail include grain, feed and salt, scrap iron and steel, hardware and non-classified items. Except for the last group, they are definitely of a non-perishable nature. The commodities shipped out mainly by truck include livestock, building materials, soft drinks, eggs and cases, empty containers, petroleum products, poultry and coops, groceries and fruit, and beer and liquors. All of the perishable or semi-perishable commodities handled are in this group, except dairy products in which case there is an almost equal division between rail and truck. The non-perishable items are mainly for current use or consumption and the shipments are made in such quantities that truck use is most convenient.

FARM SCHEDULE

By S. B. Cleland and A. A. Dowell

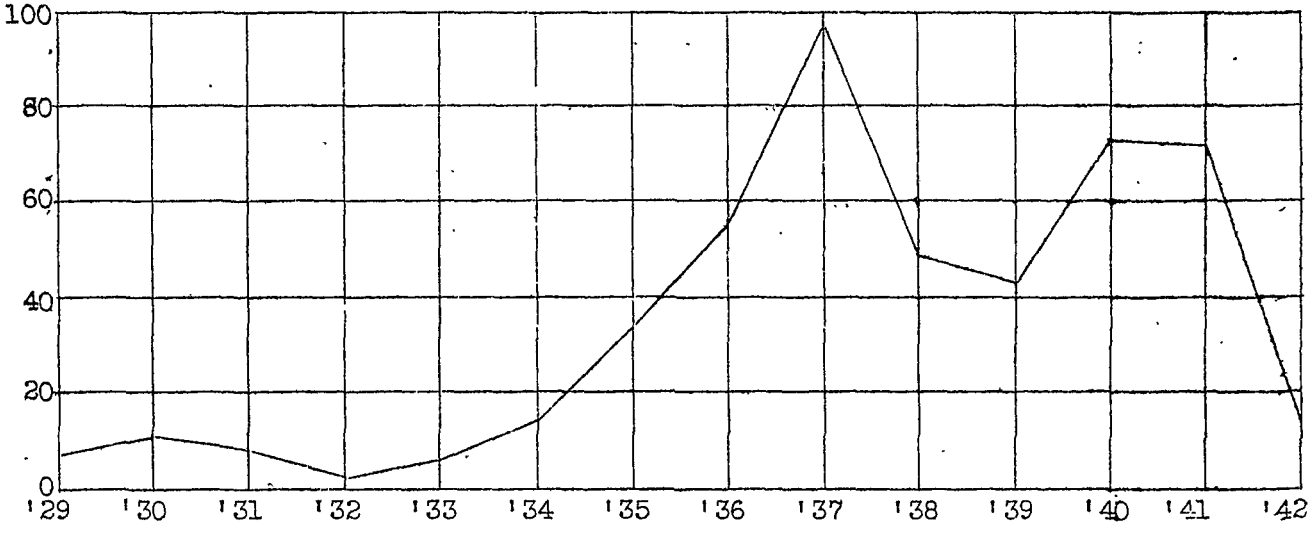
A survey of the travel and hauling by farm people was made as a part of the transportation study conducted in Martin county during the 7-day period, August 2-8, 1942. A large number of farmers were asked to keep a record of all their auto traveling during that week, and of all hauling which they did for themselves or for their neighbors, or which neighbors or commercial truckers did for them.

Neighborhood leaders throughout the county assisted in making arrangements with neighboring farmers to fill out the schedules covering the week's travel and hauling. One hundred sixty-three neighborhood leaders participated in this way. Schedules were filled out for 493 farms, well distributed over the county.

Of these 493 farms, 122 reported one auto only,- no truck, no trailer, no second car. Six reported 2 autos each; 174 reported an auto (one or more) and a trailer; 84 reported pick-up trucks (with or without autos); 99 reported standard trucks; 8 reported 2 trucks.

A large amount of valuable data was supplied by these farm schedules; a preliminary summary of the data is shown below.

Age of 490 Farm-owned Automobiles, Martin County



Year Model	No. of Cars	Year Model	No. of Cars	Year Model	No. of Cars
1921	1	1932	2	1938	49
1927	1	1933	6	1939	43
1928	4	1934	14	1940	73
1929	7	1935	34	1941	72
1930	10	1936	55	1942	14
1931	8	1937	97		

Unused Auto Tire Mileage--Report on 405 Autos, Martin County

Average Unused Mileage per Car	Number of Farms
Less than 2,000 miles	57
2,000 to 3,999 "	43
4,000 to 5,999 "	47
6,000 to 7,999 "	42
8,000 to 9,999 "	40
10,000 to 14,999 "	98
15,000 or more miles	78

Summary of Farms with One Auto Only--No Truck, Trailer, or Second Car

	Total number farms included in this group		97
Mileage:	Average miles driven during week		125
	" " " to date		44,589
	" " " in 1941		7,836
Tires:	Average number of spares		1.2
	Number cars with no spare		8
	Average unused tire mileage		8,854
Trips:	Average number trips away from farm		6.8
	Number trips with family only		5.9
	Percentage of trips on which neighbor went along		14%
		For Self	For Neighbor
Hauling: (In own car)	Farms reporting eggs taken	50	1
	" " cream "	54	16
	" " poultry "	3	-
	" " groceries brought	74	16
	" " machinery or parts brought	25	-
	" " sacked feed brought	24	2
Hauling: (By truckers)	Farms reporting cream hauled		19
	" " eggs "		30
	" " chickens "		5
	" " hogs "		7
	" " cattle "		4
	" " corn "		2
	" " tractor fuel delivered		4
	" " gasoline "		8
	" " corn "		2
	" " bread "		11
	" " other products "		26
Hauling: (By neighbor)	Farms reporting cream hauled		10
	" " corn "		1
	" " bread delivered		1
	" " other products delivered		8

CONDITION AND OPERATIONS OF COMMODITY TRUCKS

By E. F. Koller and W. H. Dankers

How long will existing supplies of trucks and tires last? This question takes on unusual significance when the supply is definitely limited as in the present situation. The information obtained from the Martin county survey greatly emphasizes the need for utmost conservation as is shown in the table below.

The Truck and Tire Situation

(Martin County-August 2-8, 1942)

	Trucks			Tires	
				Remaining Mileage	
Type of Truck	Average Miles Operated	1941 Mileage	Remaining Mileage	Front	Rear
Cream and milk	38,314	17,680	39,200	17,333	18,200
Egg and poultry	55,015	25,066	90,474	12,677	13,783
Special poultry	46,873	6,286	46,000	11,750	12,000
Petroleum	48,642	13,757	59,613	21,000	16,256
Livestock & general - X	70,648	16,980		13,328	15,868
Livestock & general - Y	118,265	45,796		25,306	29,293
Farm	48,428	4,690		8,571	

In terms of the miles driven in an average year, such as 1941, and the total miles on the truck, the truck used by the farmer is the oldest; and the cream and milk, and regular egg and poultry trucks are the newest. The life remaining in the truck was not obtained for all trucks but in the cases obtained was two years or more.

The real problem is the remaining mileage in tires. Using the cream and milk trucks as an illustration, the trucks were slightly over two years old, on the basis of the miles operated per year, and had slightly over two years of remaining life; but the tires were good for only another year. With a very small tire quota, and a long waiting list of eligible users, this situation is serious. Truck life without tire life is of little value for dependable transportation. For all the trucks studied, it will be observed that the remaining "tire life" is relatively short compared to the number of miles the trucks are driven in one year, as in 1941.

Are trucks and tires being used efficiently? To make these materials last, the number of trips and the total mileage driven during a given time must be held to a minimum for the service required. Averages for the trucks studied from each group and comparisons of groups are given in the following table.

Truck Operations

(Martin County, August 2-8, 1942)

Number of Trucks	Cream Trucks	Egg and Poultry Trucks	Special Poultry Trucks	Petroleum Trucks (farm)
County	14	9	8	42
Outside	7	13	1	9
Total mileage (week)	4,208	5,672	744	6,614
Number of trips (week)	75	92	43	350
Miles per trip (aver.)	55	61.6	17.3	18.9
Patron calls (week)	2,971	2,069	54	905
Miles per patron call (aver.)	1.4	2.7	13.8	7.3
Volume per patron call (aver.)	30.8 lbs.	(31.4 doz. (16.3 lbs. poultry (12.3 lbs. feed	377 lbs.	105 gal. l.o.
Volume per mile traveled (aver.)	21.8 lbs.	(11.5 doz. (5.9 lbs. poultry (4.5 lbs. feed	27.4 lbs.	14.4 gal. l.o.

About as many trucks were used to deliver motor fuels to farms, as together were used in hauling produce (cream, milk, eggs, and poultry) from the farm to the market; however, the mileage driven was about 62 per cent as much. Of the groups compared, the cream, and egg and poultry trucks were making the longest trips.

Good measures of efficiency are the miles traveled per patron call, the volume per patron call and especially the volume per mile traveled. If the number of miles traveled per patron is low, there is good indication that the organization or the trucker has followed the desirable policy of arranging the routes or trips so as to serve the largest number of patrons with a minimum of driving. Volume per patron call is significant only when quality and farm production problems have been carefully considered. For cream and milk, the volume per patron call cannot be easily adjusted by the buying organization and the trucker. In the case of petroleum, adjustments in selling and delivery methods could increase the volume per patron call materially. The volume per mile traveled is a result of the miles traveled and the volume per patron call. To study the efficiency of a single truck operator, it is necessary to compare his operations with the average of his own group, so as to eliminate any differences between truck groups and the commodity they haul. Material for the average, high, and low in efficiency factors has been prepared for each truck group so that they may study their own operations more carefully and make adjustments toward the conservation of trucks and tires.